

**ABSTRACT**

The present invention provides a method and apparatus for in-process handling of concentrated cumene hydroperoxide ("CHP") in a process for the production of phenol and acetone by the decomposition of CHP. The method of the present invention makes use of a tube and shell type heat exchanger as a vessel to accumulate a working volume of concentrated CHP from a distillation unit. Concentrated CHP is then fed to a decomposer unit from the accumulated working volume. Use of a tube and shell type heat exchanger improves safety over designs that make use of an unmodified tank or drum.